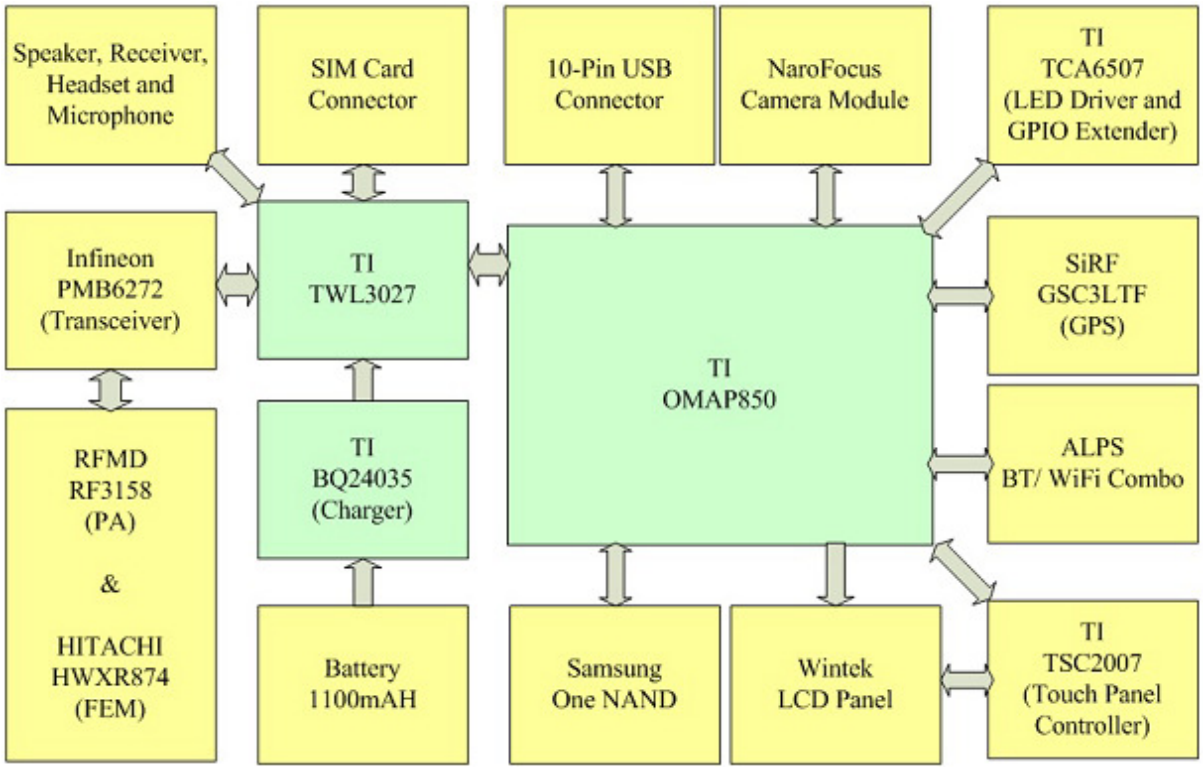
ASUS P320 Level 3 4 Trouble shooting Guide

Ver 1.0

CONTENT

1. Over view

1.1 System block diagram



i. Figure 1. System Block Diagram

1.2 Power Domain Block

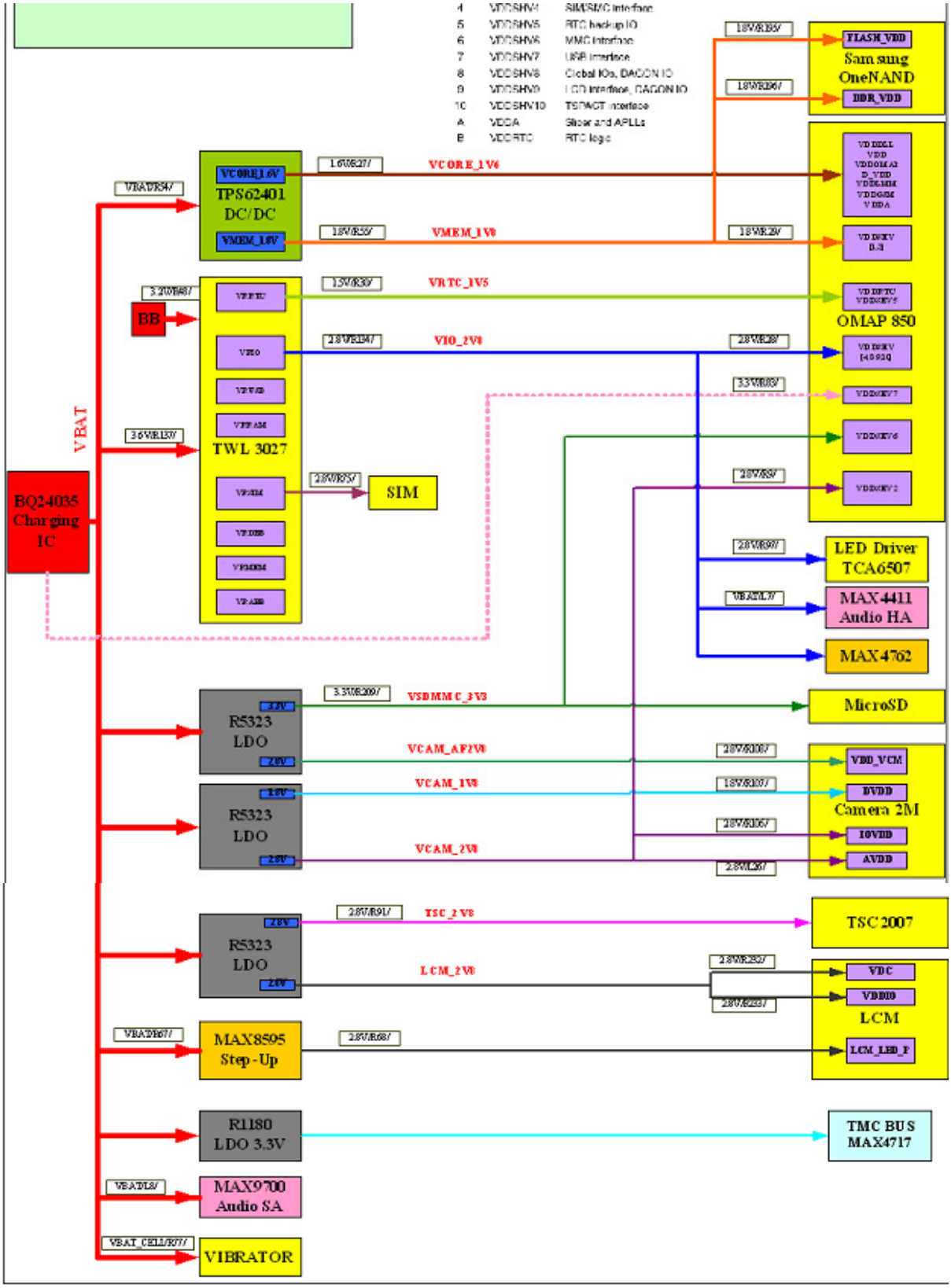


Figure 2. Power Block Diagram

1.3 Key Features

System	**EDGE/GPRS/GSM 850/900/1800/1900MHz**
	EGPRS Class B, Multi-slot Class 10
Form Factor	**Bar Type**
Dimension & Weight	**99 x 54.5 x 13.35 mm, 105g**
Battery	**1100 mAh Lithium-Ion**
Talk Time	**4 hrs (TBC)**
OS	**Microsoft Windows Mobile 6 Professional***
Processor	**TI OMAP 850 200 MHz**
Memory	**128 MB Flash + 64 MB DDR**
Display	**2.6, Touch Screen 65K, TFT, 240 x 320**
Camera	**2.0 Mega pixel AF**
Connectivity	**WLAN 802.11b+g, USB v1.1, Bluetooth V2.0+EDR**
Exp. Slot	**Micro-SD (SDHC Compatible)**
Music	**MP3, WMA, AAC, and AAC+**
Browsing	**HTTP and WAP 2.0**
Messaging	**SMS, MMS 1.2, and Push E-mail**
JAVA	**J2ME (CLDC 1.1 + MIDP2.0)**
DRM	**OMA 1.0 (optional)**
PIM & Utilities	**Contacts, Notes, Calendar, Tasks, Alarm, Calculator, File Manager, and MSN**
Ringtone	**128-ch Polyphonic ringer & MP3**
Others	**ASUS Today, Profile Manager, Theme Manager, UrTime , Newstation, ASUS Backup, etc.**

1.4 Appearance

1、Power Key
2、Receiver
3、Stylus
4、VR Key
5、Volume Up Key
6、Volume Down Key
7、Micro SD Card Cover
8、Reset Key
9、Function Key 1
10、Send Key
11、Start Key
12、Mini USB Socket
13、5-way Navi Key
14、Function Key 2
15、End Key
16、OK Key
17、GPS Antenna Cover
18、Hold Key
19、Camera Key
20、Camera
21、Speaker

1.5 Placement TOP View

1.15-Pin Debug Connector

2. Receiver

3.3-Color LED

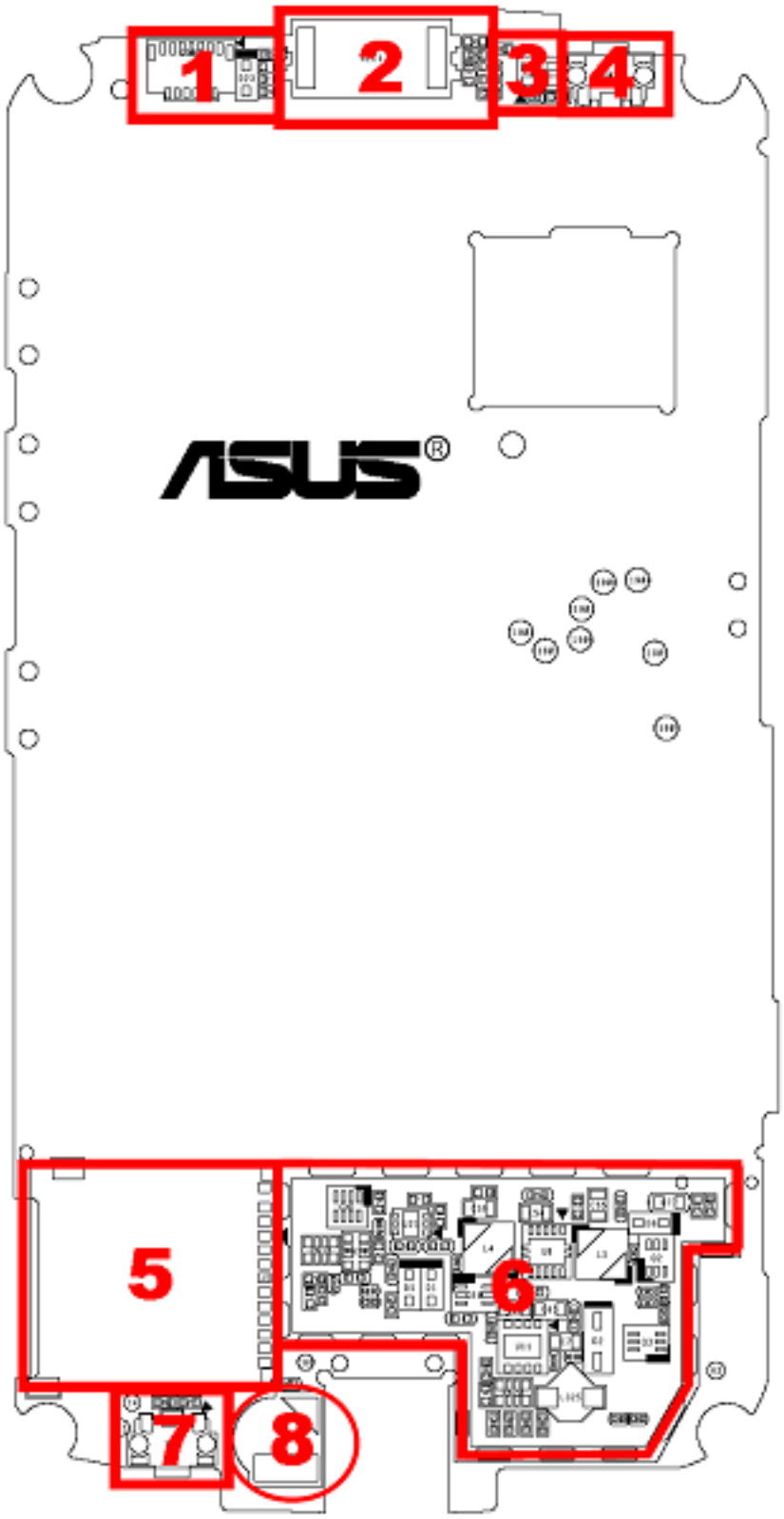
4. Power Key Switch

5. Micro SD Card Socket

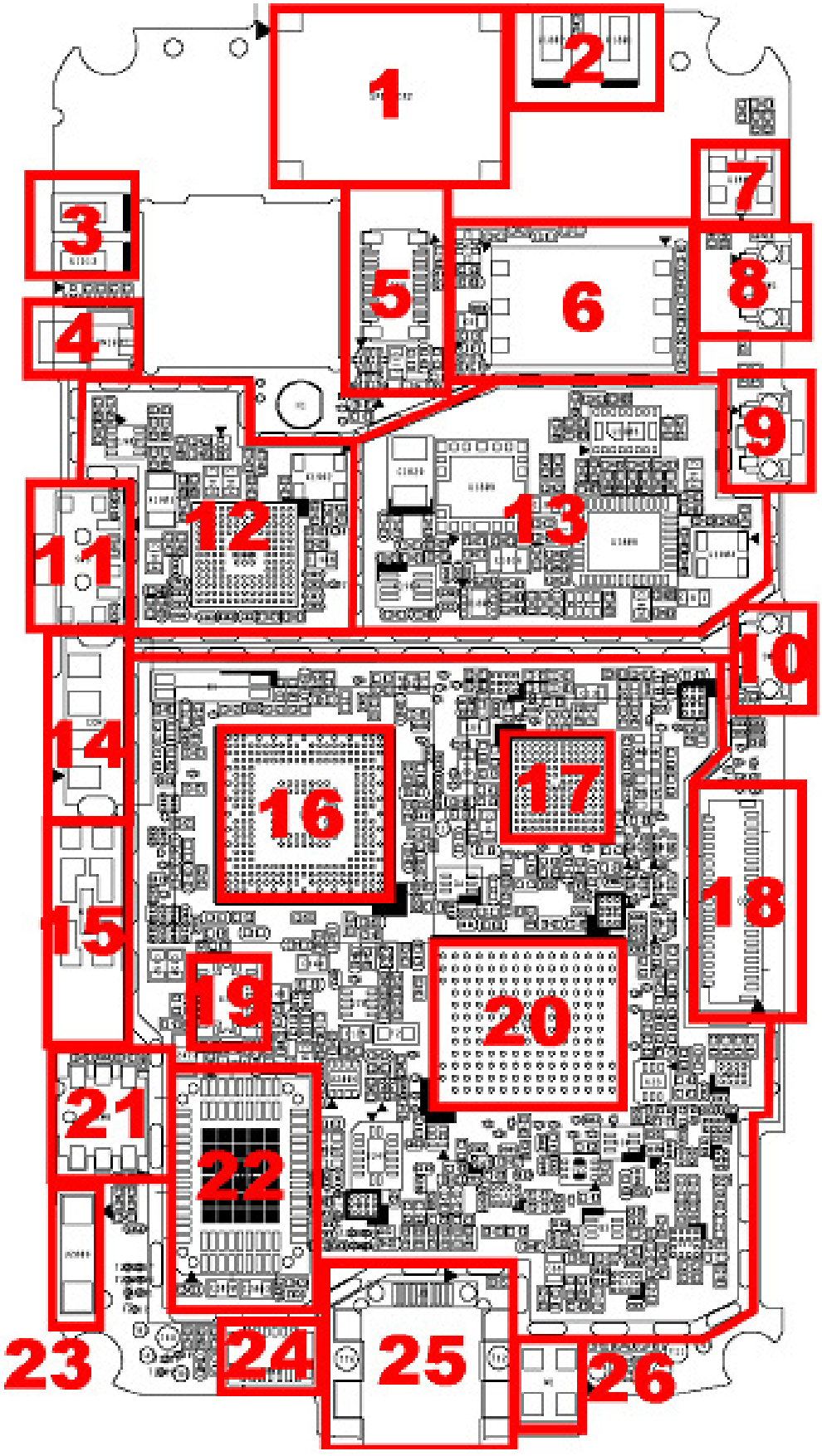
6. Power

7. Reset Key Switch

8. Backup Battery



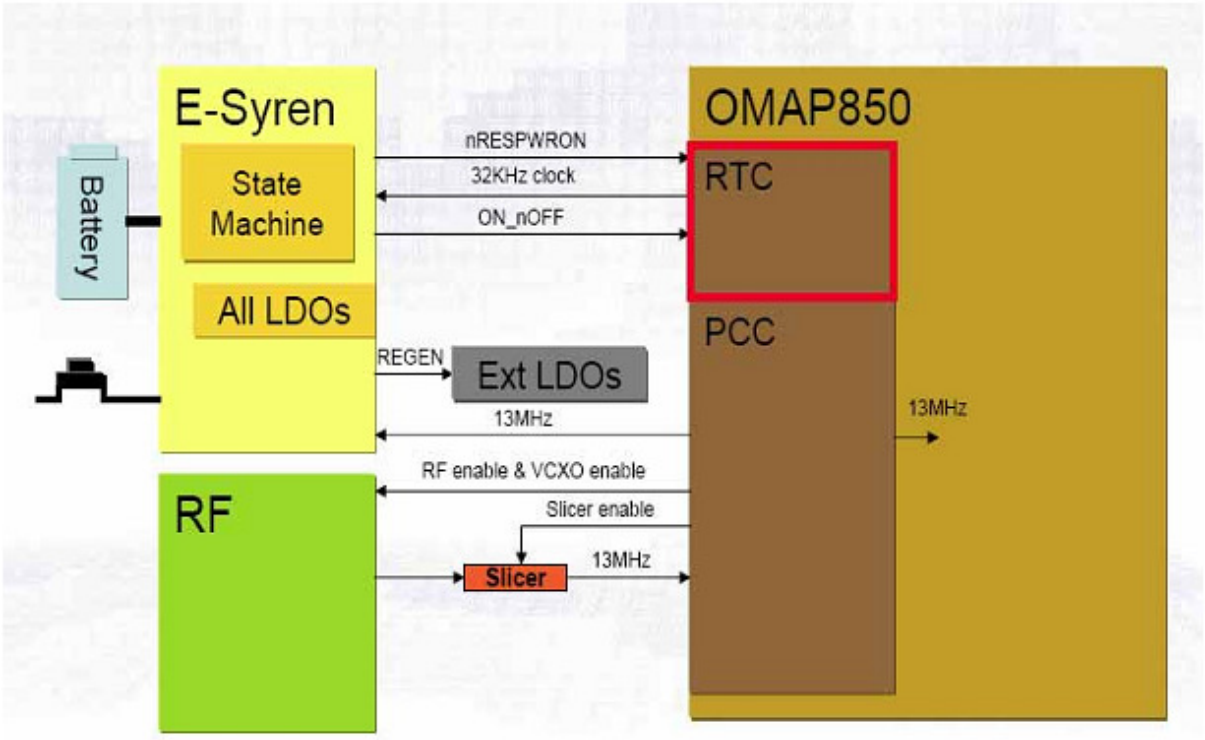
1.6 Placement Bottom View



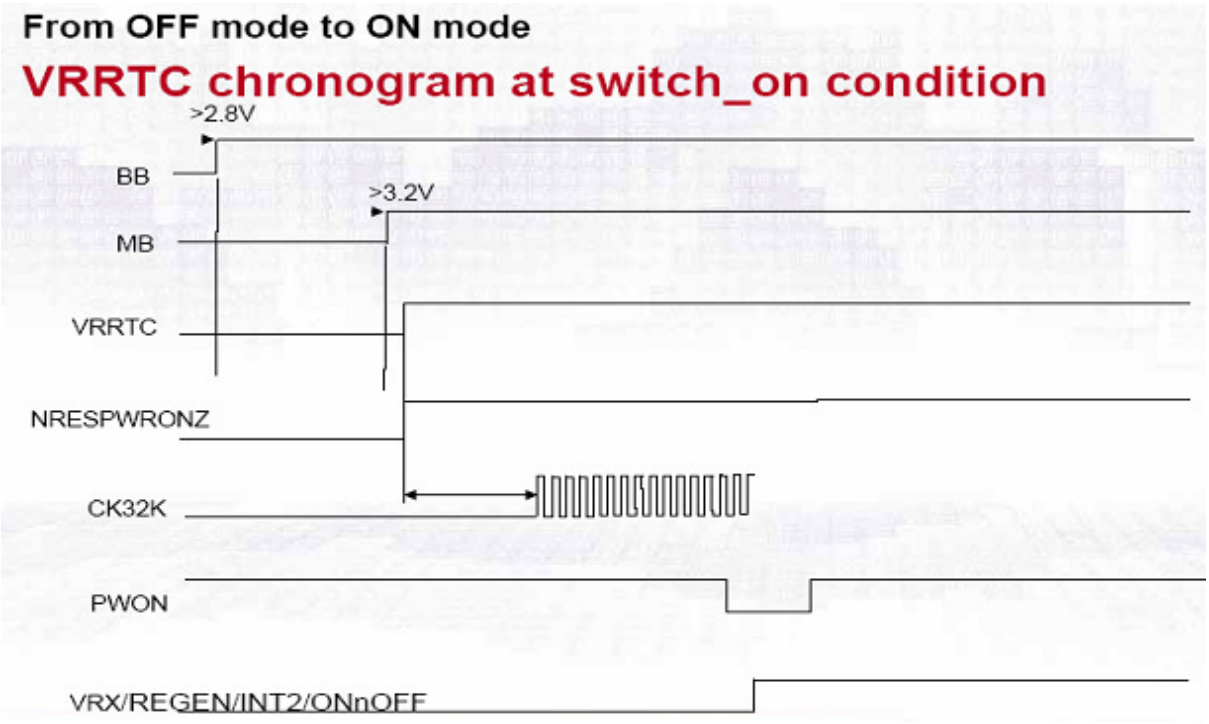
1. Speaker
2. GSM Antenna Spring
3. GPS Antenna Spring
4. GPS Antenna Connector
5. Camera Module Connector
6. SIM Card Socket
7. GSM Antenna Conductive Connector
8. VR Key Switch
9. Volume Up Switch
10. Volume Down Switch
11. Hold Key Switch
12. GPS Part
13. GSM Part
14. Battery Connector
15. Vibrator
16. OMAP 850 Processor
17. TWL3027 (E-Syren) PMU IC
18. LCM Connector
19. Charger IC
20. One NAND
21. Camera Key Switch
22. BT/ WiFi Combo Module
23. BT/ WiFi Chip Antenna
24. Reset Key Switch
25. Mini USB Connector
26. Microphone

2. System Boot up Sequence:

2.1 Power/ Clock/ Reset Ramp Process



2.2 Power On Reset Generation



3. Equipment / Tools

1. Power Source: Power Supply (Monitor Current)

2. Digital Phosphor Oscilloscope

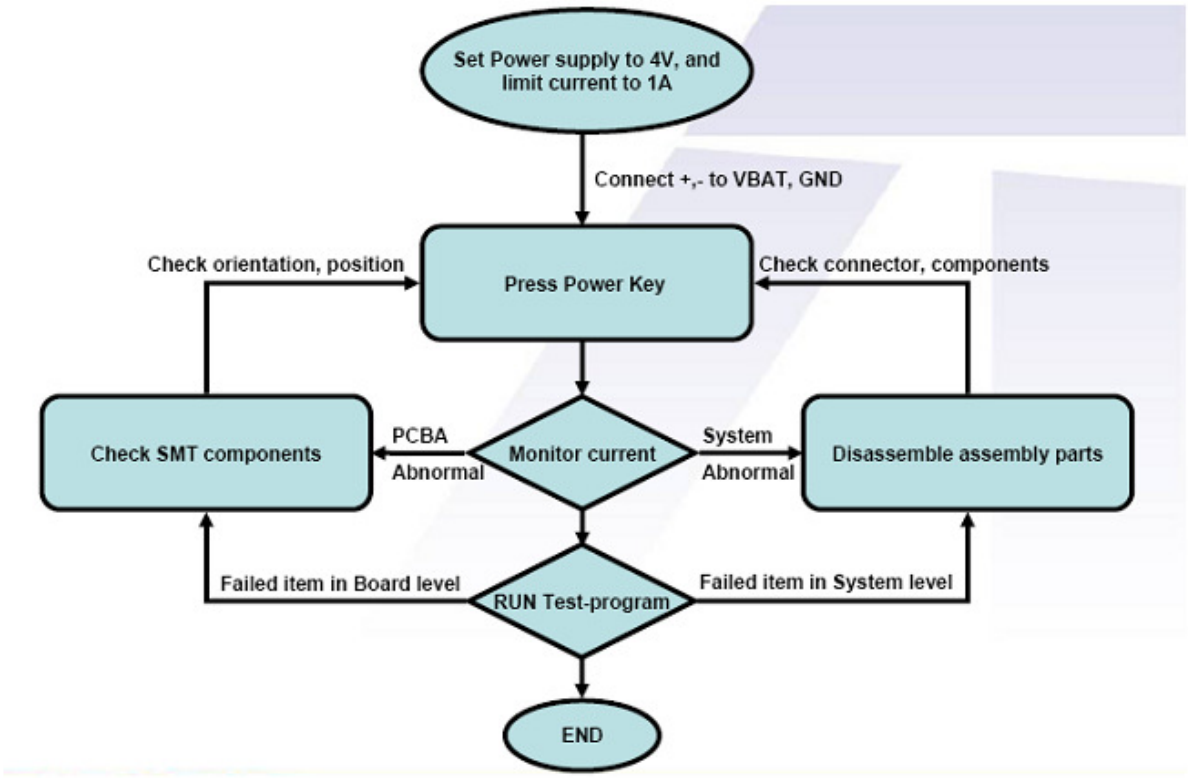
3. Adapter: JSP050090UU

4.Micro SD Card With Test-Program

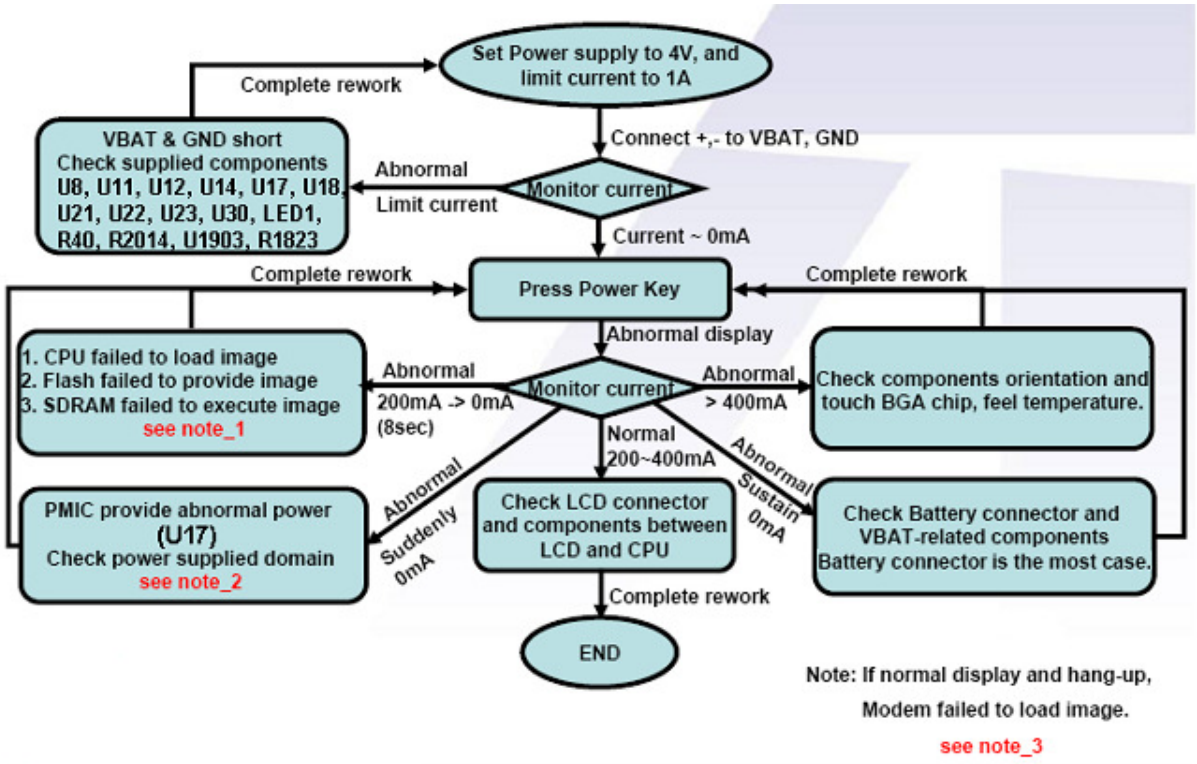
5. ME Tools

6. Headset (USB Port)

4. Trouble shooting case



4.1 Can’ t Power On



Note 1:

1、Measure the reset signal (MPU_RST#、ON_nOff), Low► inspect related components.

2 、 Measure clock signals XTAL_OUT (32kHz), CLK13M (13MHz),RF_CLK (26MHz) ►inspect related components U1, X1, U1804.

3、Measure Chip Select Signal FCS# and DDR_CS# (H←→L) ► inspect U1 and U5.

4、Measure Data Signal FLASH_D0 and DDR_D0 (H←→L) ► inspect U1 and U5.

5、Remove the Memory U5, Re-download Image and Remount U5.

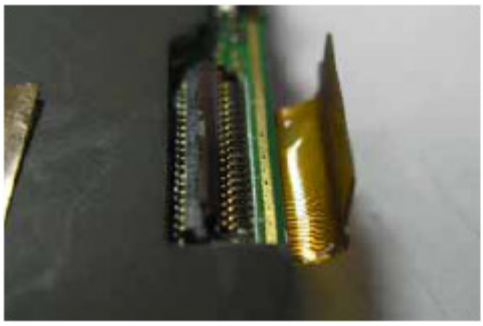
Note 2:

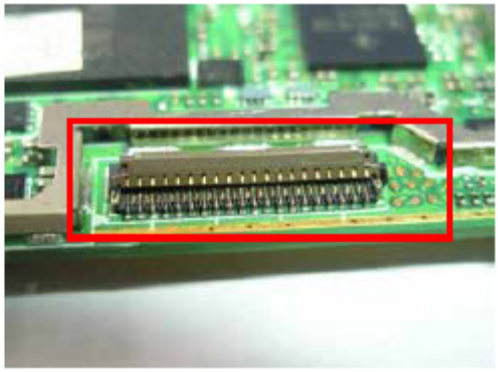
1、Don’t provide Power to PCB, and measure the impedance of all power domain on the device.

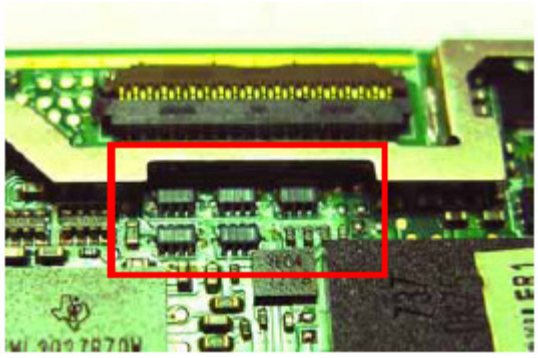
Note 3:

1、Re-download image.

4.2 Display Failed





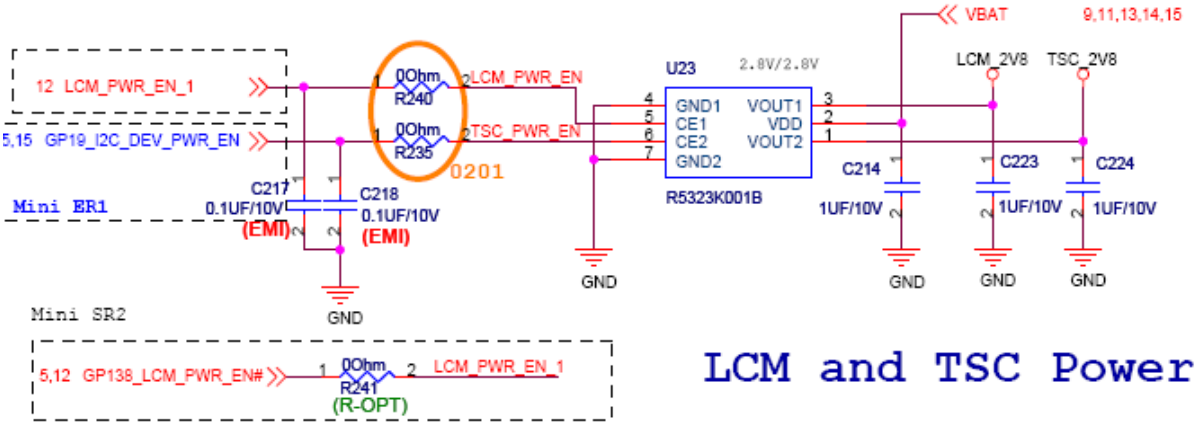


1. Check LCD connector (CON9) => assembly, soldering issue

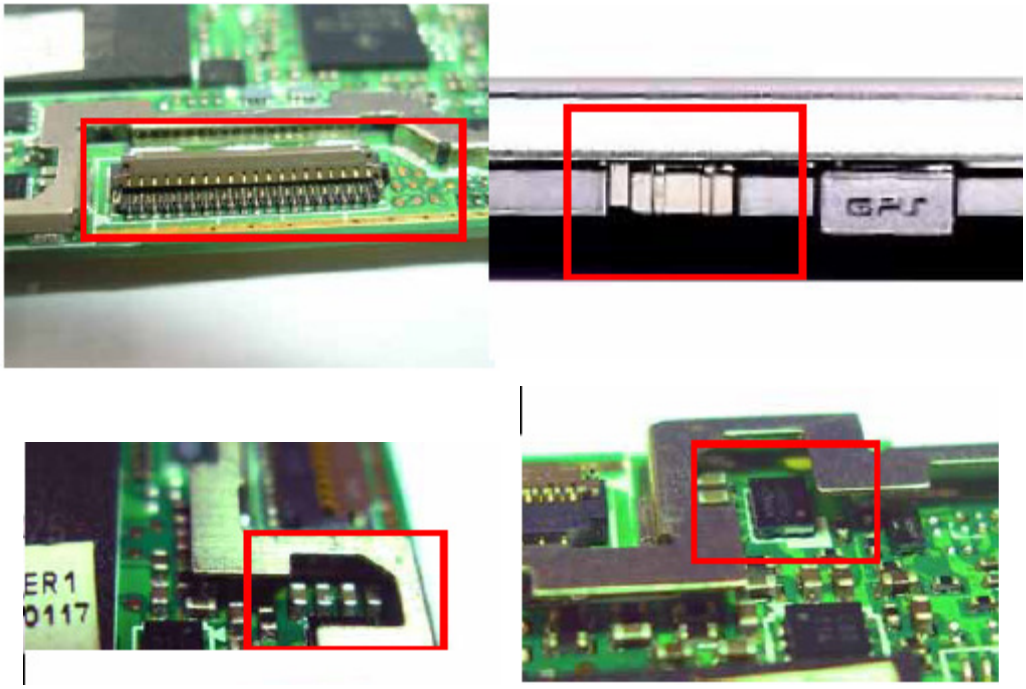
2. Replace LCD to golden sample => component issue

3. Check power supplied (R233, R232), LCM_RST# (R195), LCM_PWR_EN (R240) => soldering issue

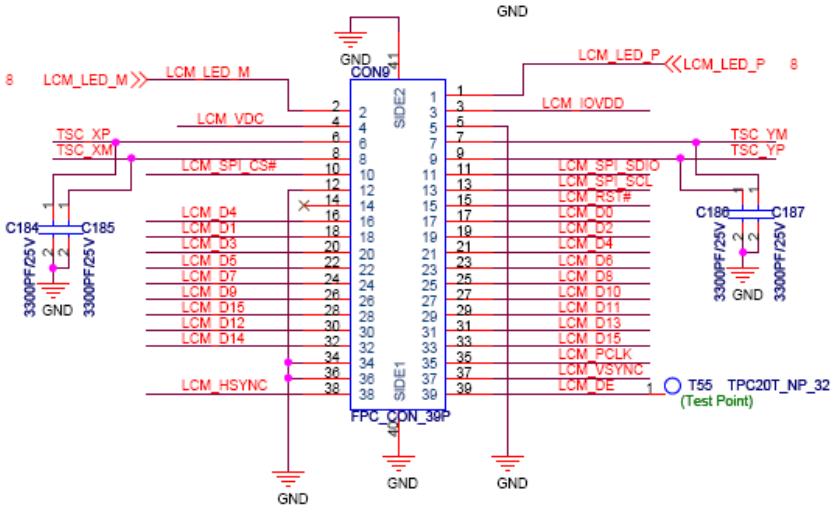
4. Check communicated components between LCD and CPU (EMI1~5) => soldering issue.



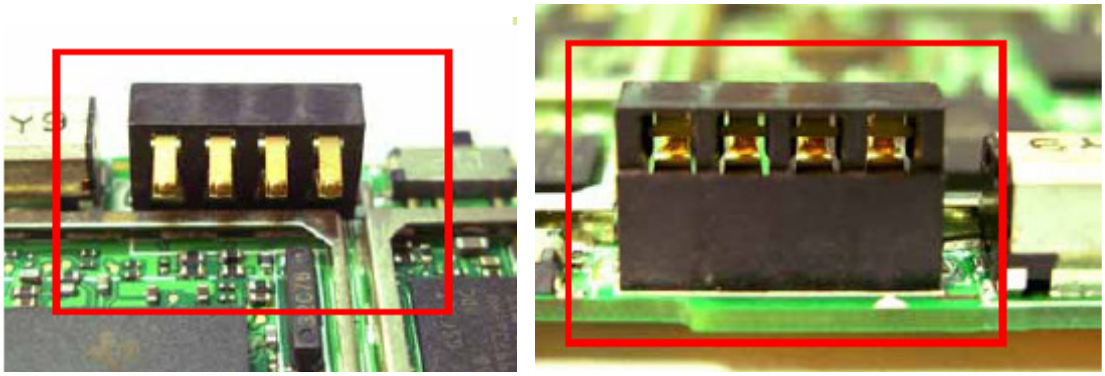
4.3 Touch Panel Failed



1. Check LCD connector (CON9) => Assembly, Soldering issue
2. Replace LCD to golden sample => Component issue
3. Check if the Hold Key is locked => Assemble issue
4. Check U15. C184~C187 => Assembly, Soldering issue
5. Check Power R91=> Soldering issue



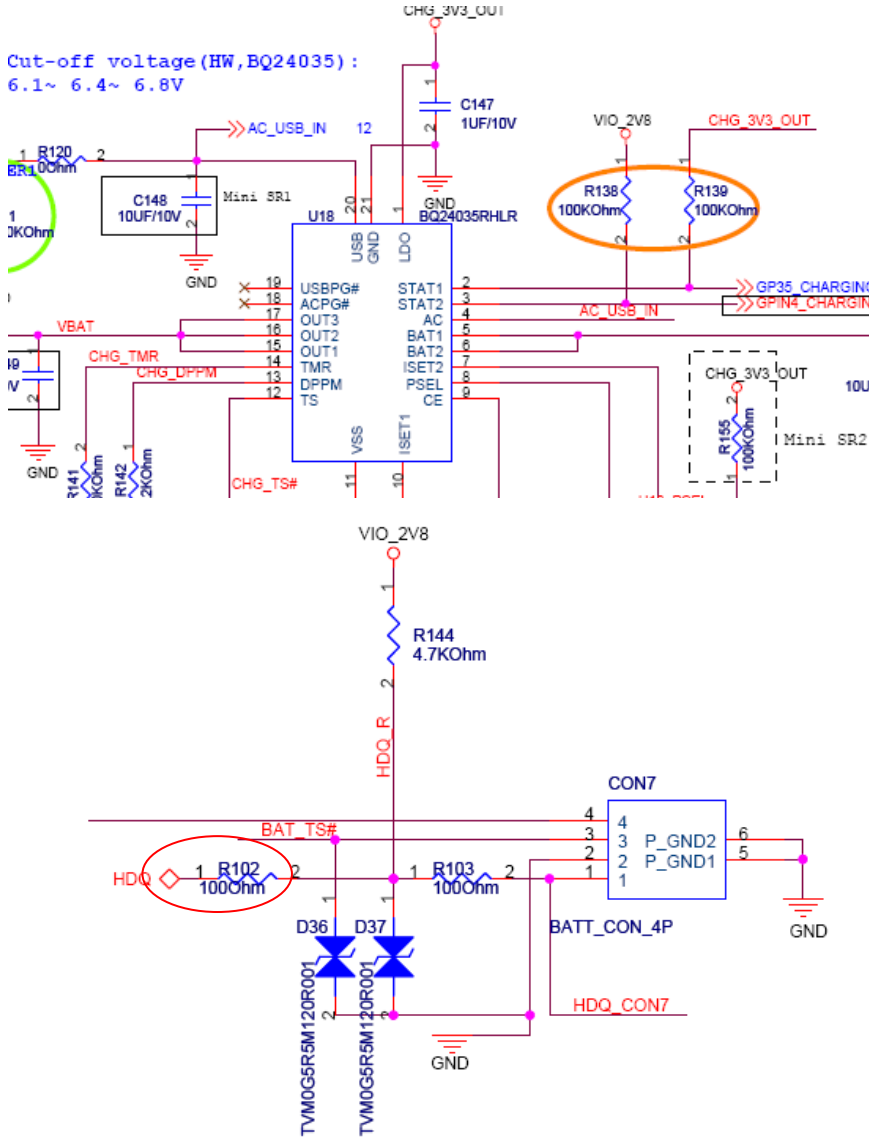
4.4 Battery connector defectives



1. Check the Battery connect (CON7) => Soldering issue

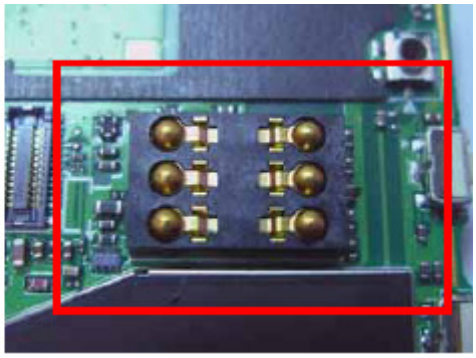
2. Check signal, BAT HDQ (R102), U18 (Charger IC) => Soldering issue

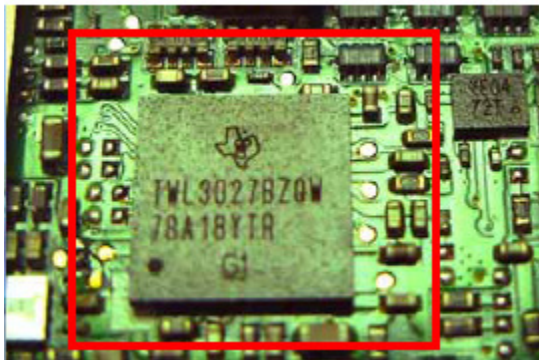
The Charger IC can get the current via CON7.



4.5 SIM Card Failed

Phone Off



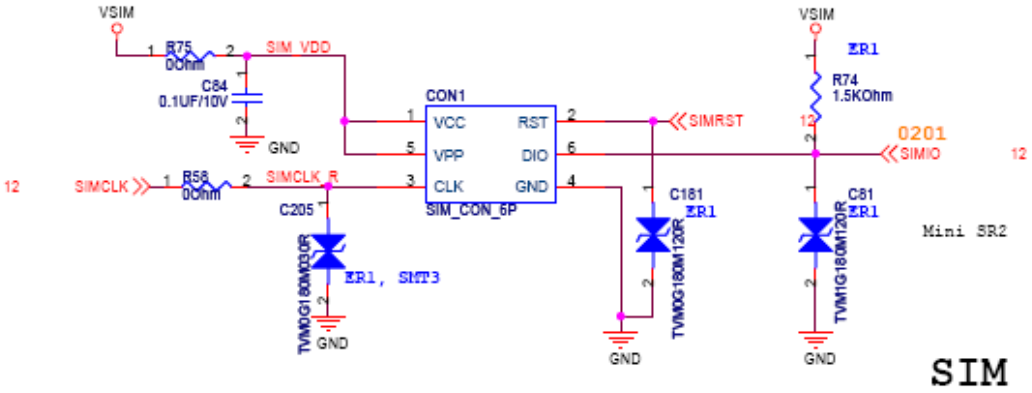


1. Check Wireless-manager on the WM6, Phone function must be ON => Operation notice

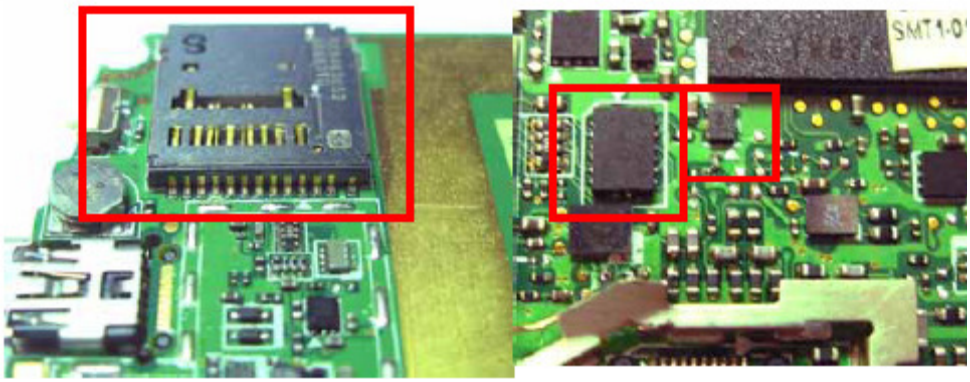
2. Check antenna cover => Assembly issue

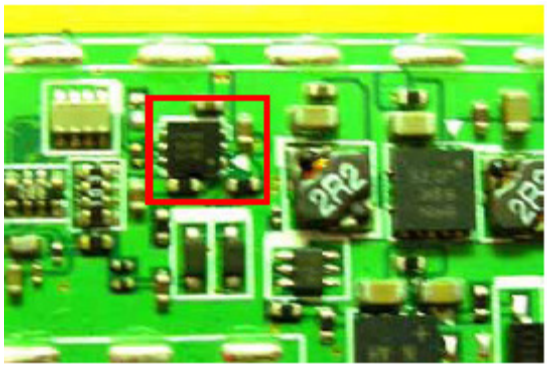
3. Check SIM socket (CON1) and peripherals => Soldering issue

4. Check E-Syren (U17) and peripherals => Soldering issue



4.6 Micro SD Card Failed



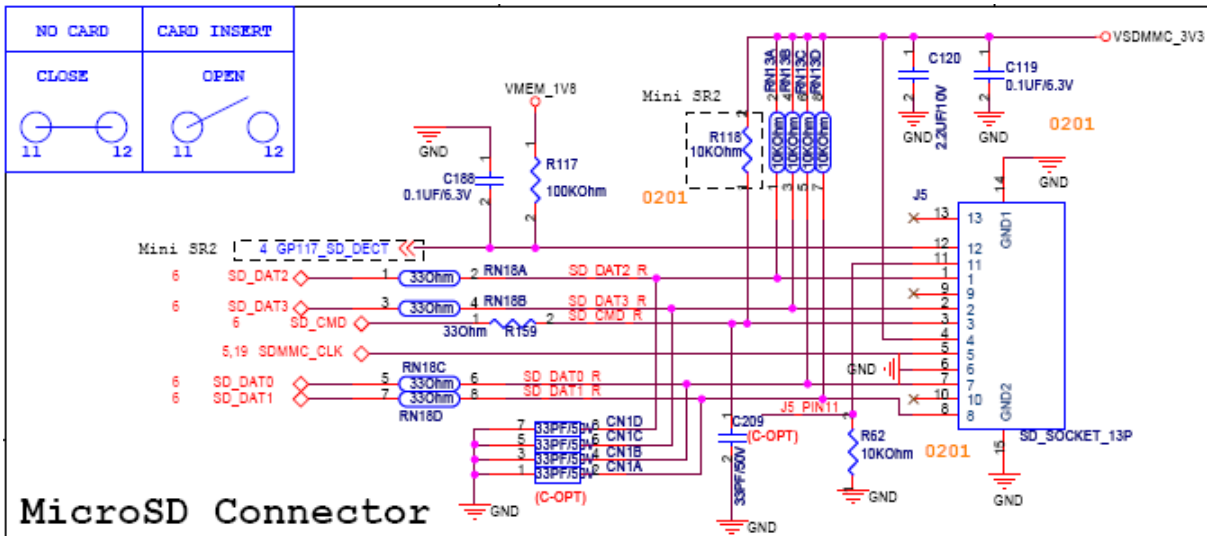


1. Check Micro-SD socket (J5) => soldering issue.

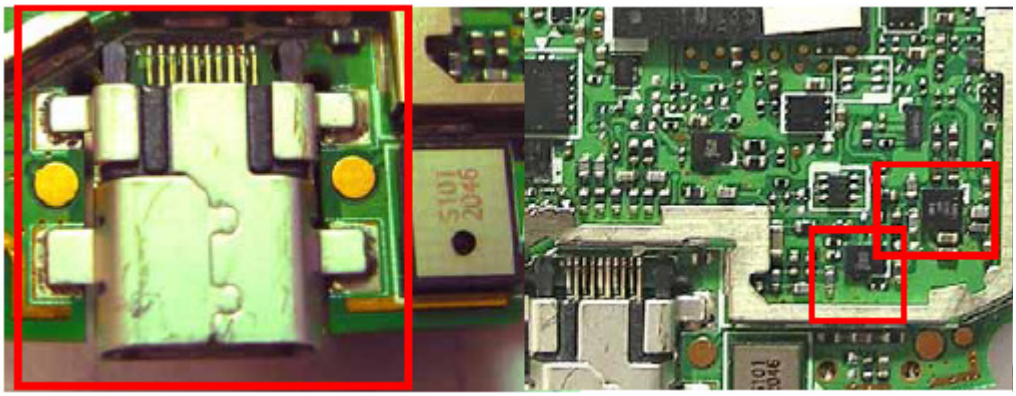
2. Check communicated components between Micro-SD (J5) and CPU (U1), U346, U347 peripherals => Soldering .

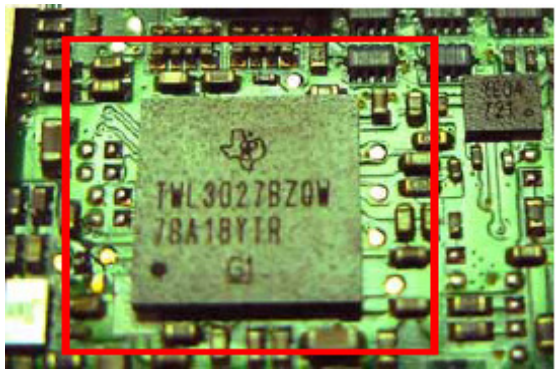
3. Measure power supplied U21 and R209 => Solder issue.

4. Measure clock signal SDMMC_CLK (R159) => Check U1 and peripherals



4.7 Audio Headphone Failed

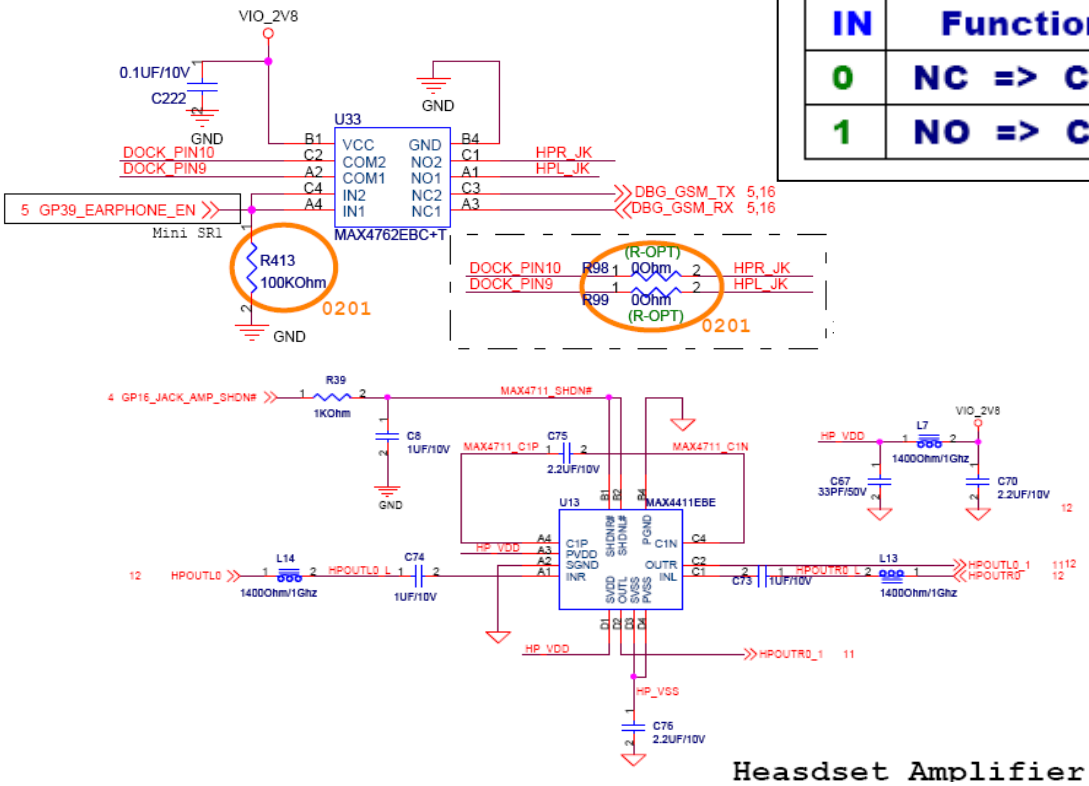




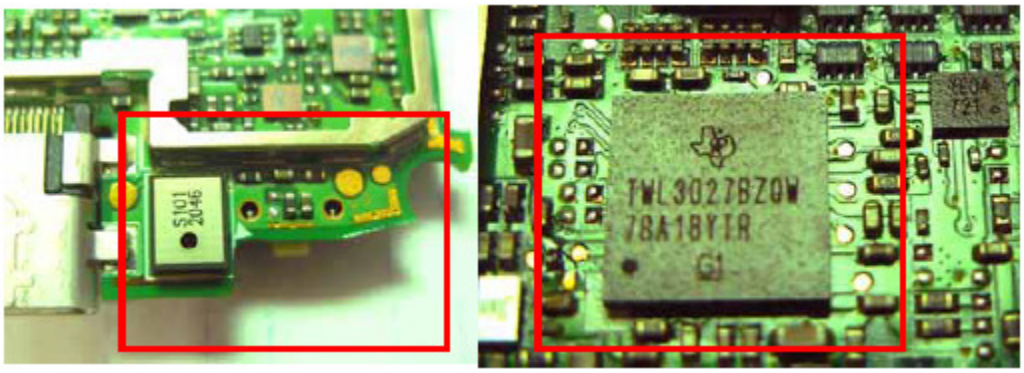
1. Check Mini USB Connector (J6) => SMT issue

2. Check switch (U33), Amplifier (U13), E-Syren (U17) and peripherals => SMT issue.

IN	Function
0	NC => COM
1	NO => COM

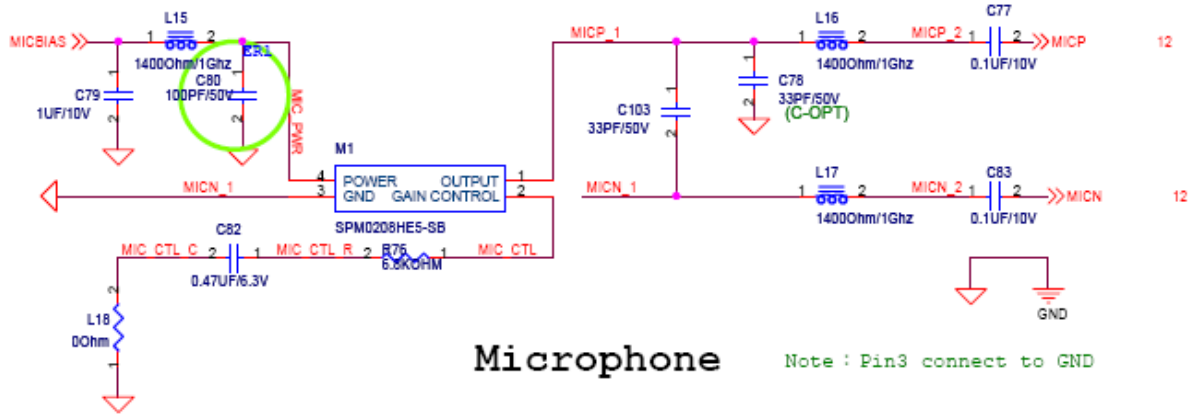


4.8 Board Microphone Failed

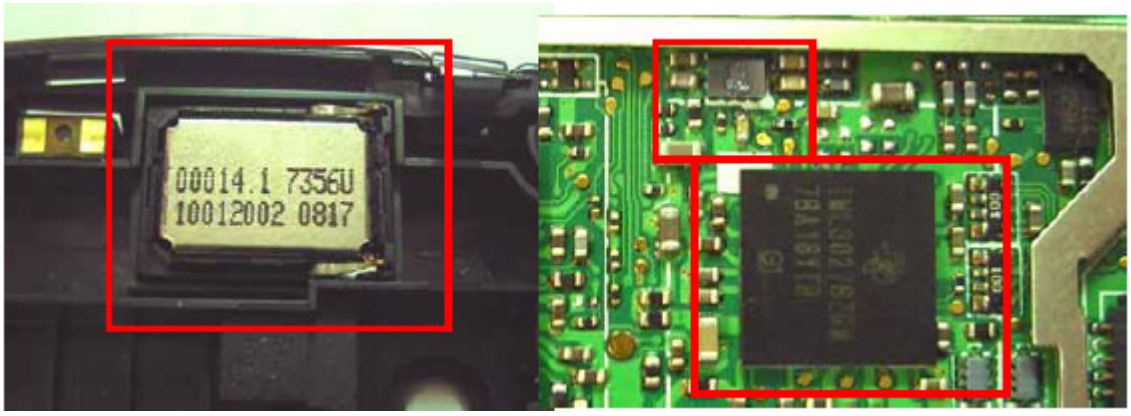


1. Check assembly rubber => Assembly issue.

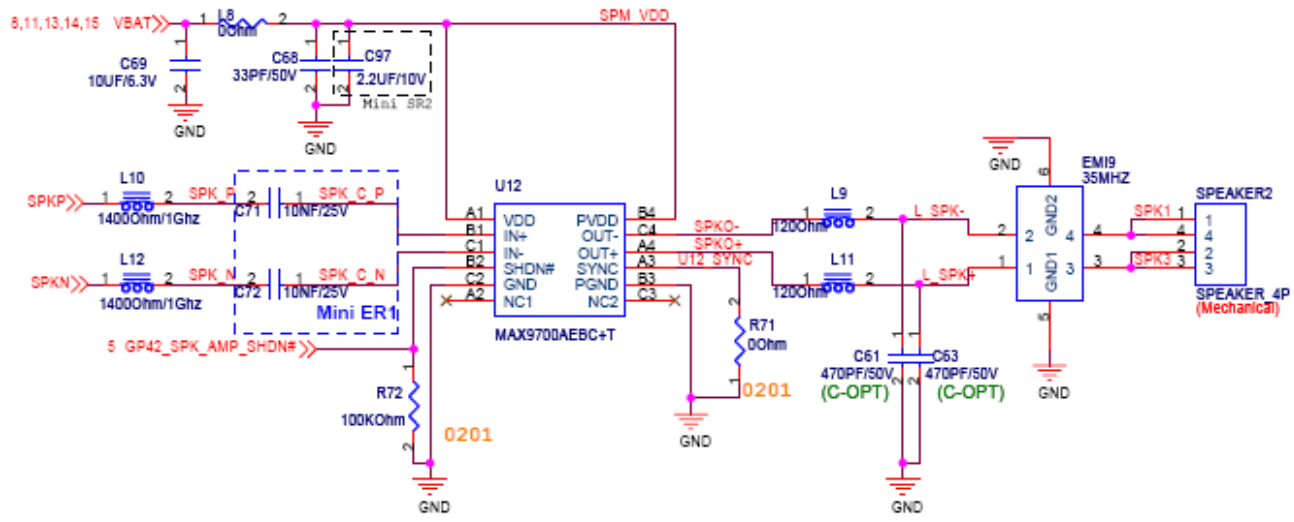
2. Check Board Microphone (M1), E-Syren (U17) and peripherals => SMT issue.



4.9 Speaker Failed

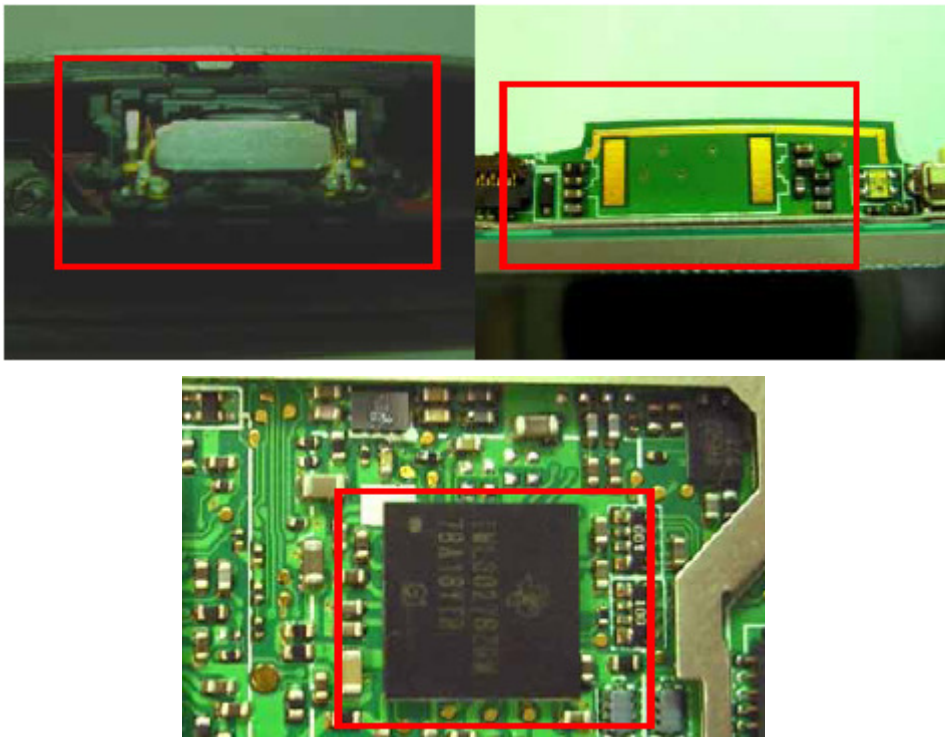


1. Check Speaker Entity and Spring => Assembly, SMT
2. Replace to golden sample => Component issue.
3. Check Power amplifier (U12), E-Syren (U17) and peripherals => SMT issue.



Speaker Ampifier

4.10 Receiver Failed



1. Check Receiver Entity and Spring => Assembly, SMT
2. Replace to golden sample => Component issue
3. Check Receiver Pad (REC1) , E-Syren (U17) and peripherals => SMT issue.

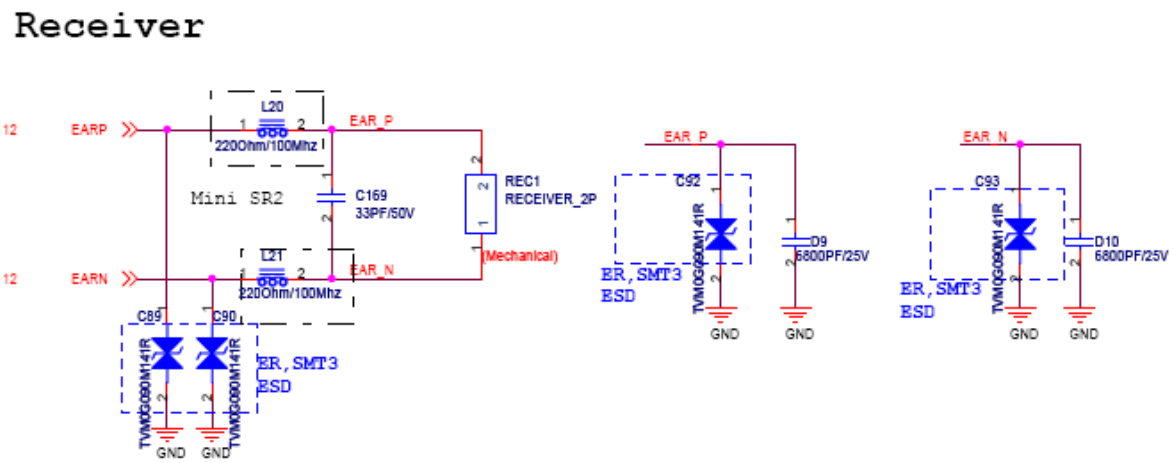


Figure 21. WiFi circuit

5. RF Repair requirement

5.1 Software requirements：

RadioDevTool->TI Platform RF Debug Tool (2G~3G)

Modem Firmware on the SIP

5.2 Hardware requirements：

RF Connector and RF cable

High Frequency Probe with DC Block (connect with a 0603 1μF capacitor)

5.3 Equipment：

PC

Test Fixture /PC Cable + Open COM port tool

Oscilloscope

Communication tester：Agilent 8960, CMU200 or Anritsu 8820

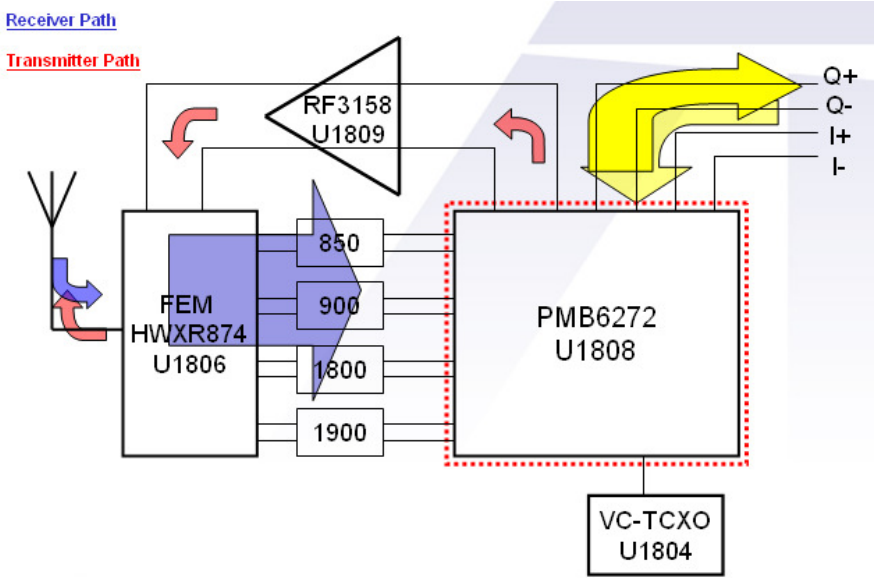
Digital Multi Meter

Power Supply

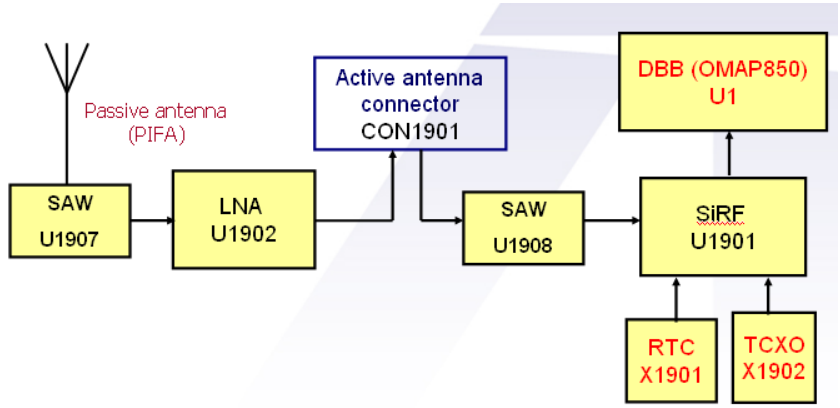
Spectrum Analyzer (up to 3.0 GHz)

6. RF Block Diagram

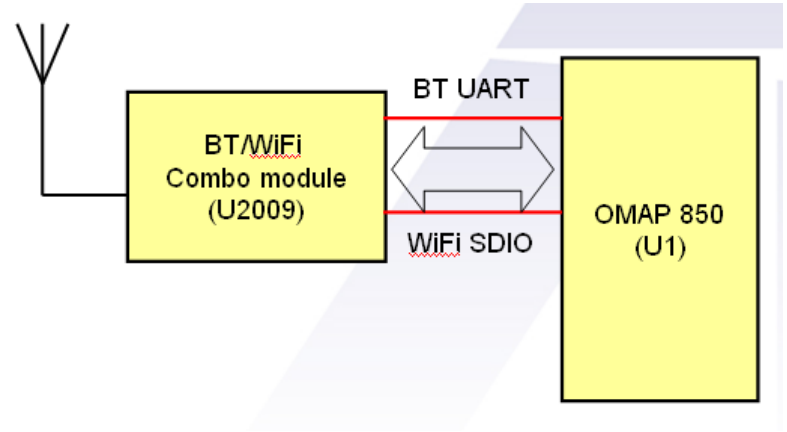
6.1 GSM/EDGE



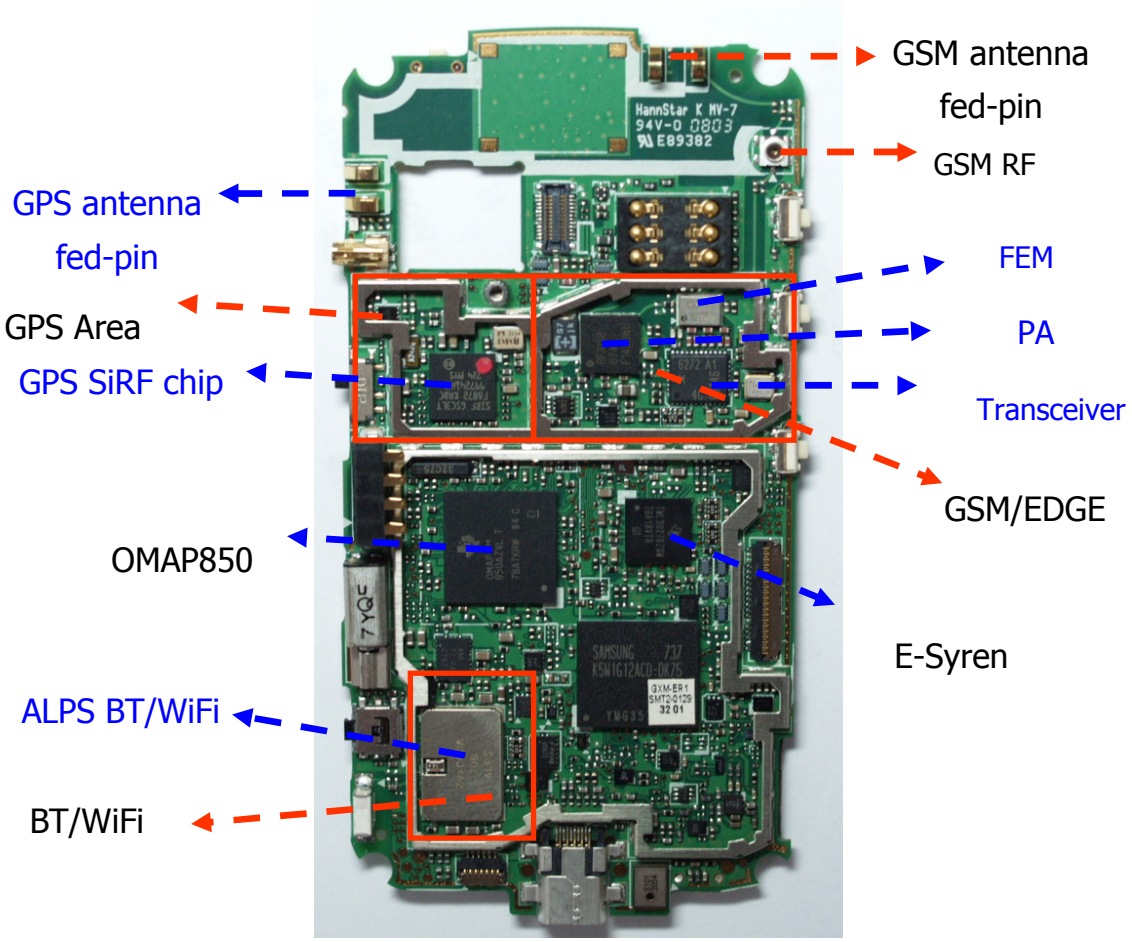
6.2 GPS



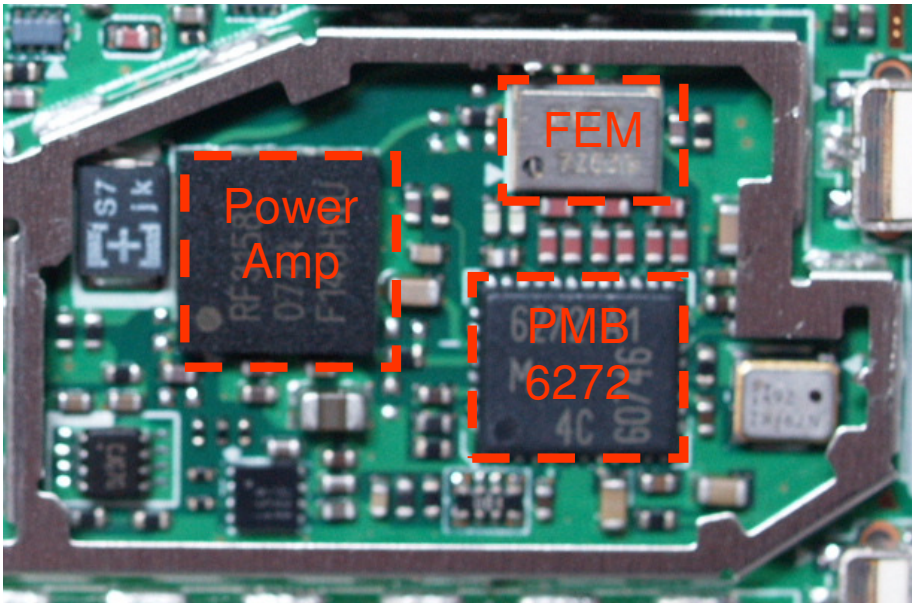
6.3 BT/WiFi



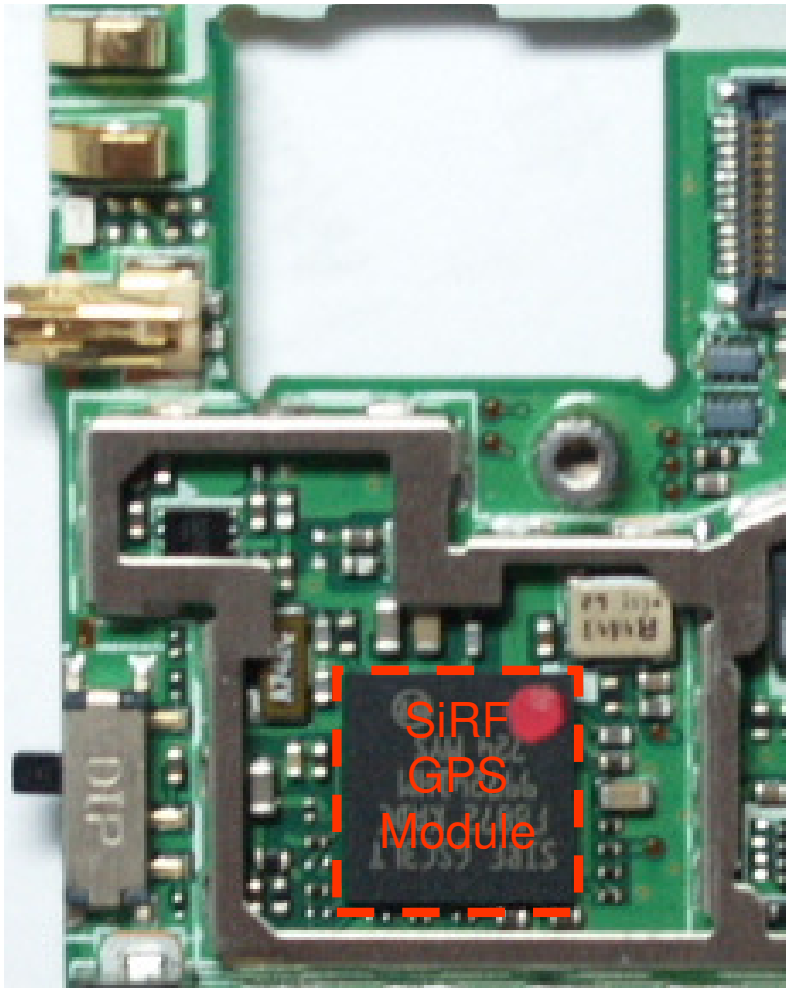
7. RF PCB Location



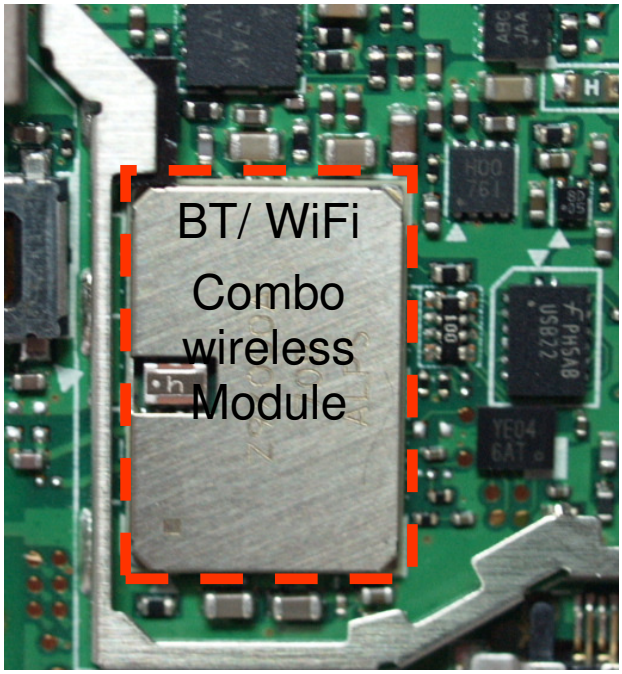
7.1 GSM



7.2 GPS



7.3 BT / WiFi



8. GSM Trouble Shooting

8.1 Methods for debugging

GSM RF performance

1. Calibration log file
2. Using debug tool

AFC：Frequency calibration

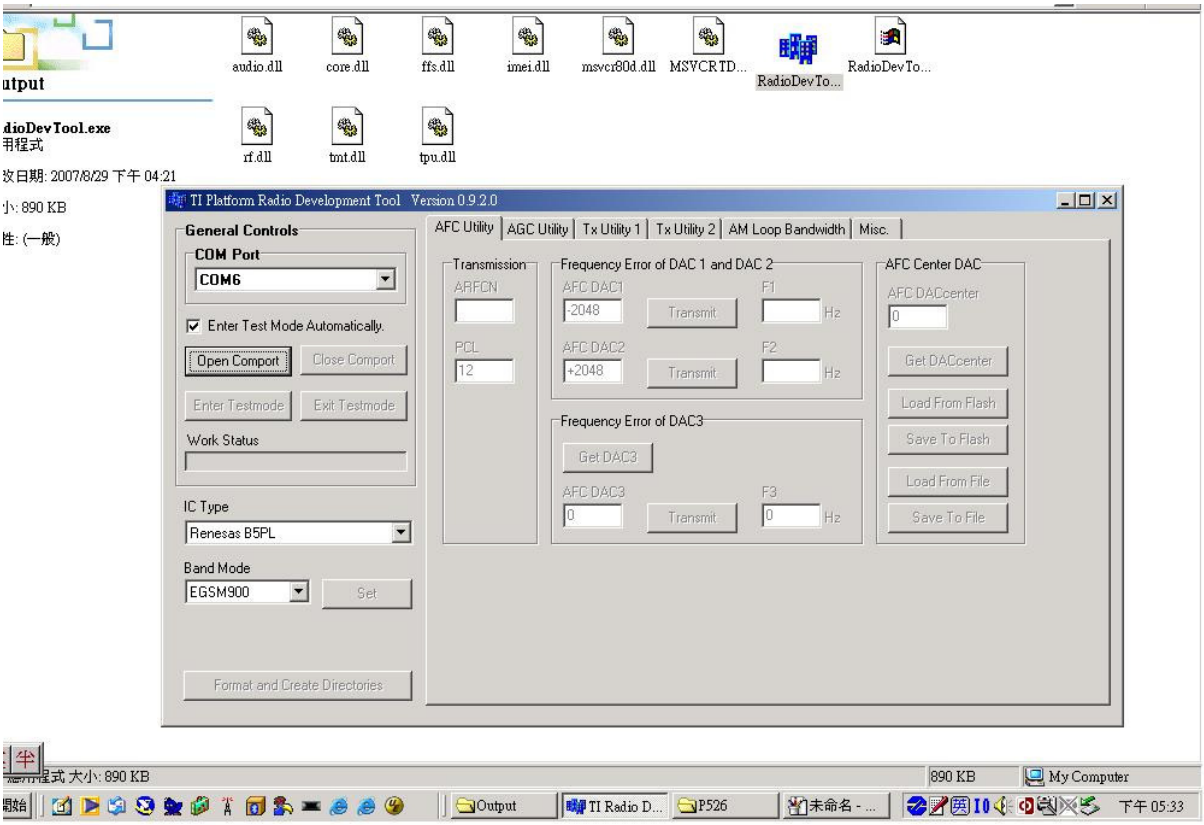
AGC：RX gain calibration

APC：TX power calibration (GSM & EDGE) Debug Tool

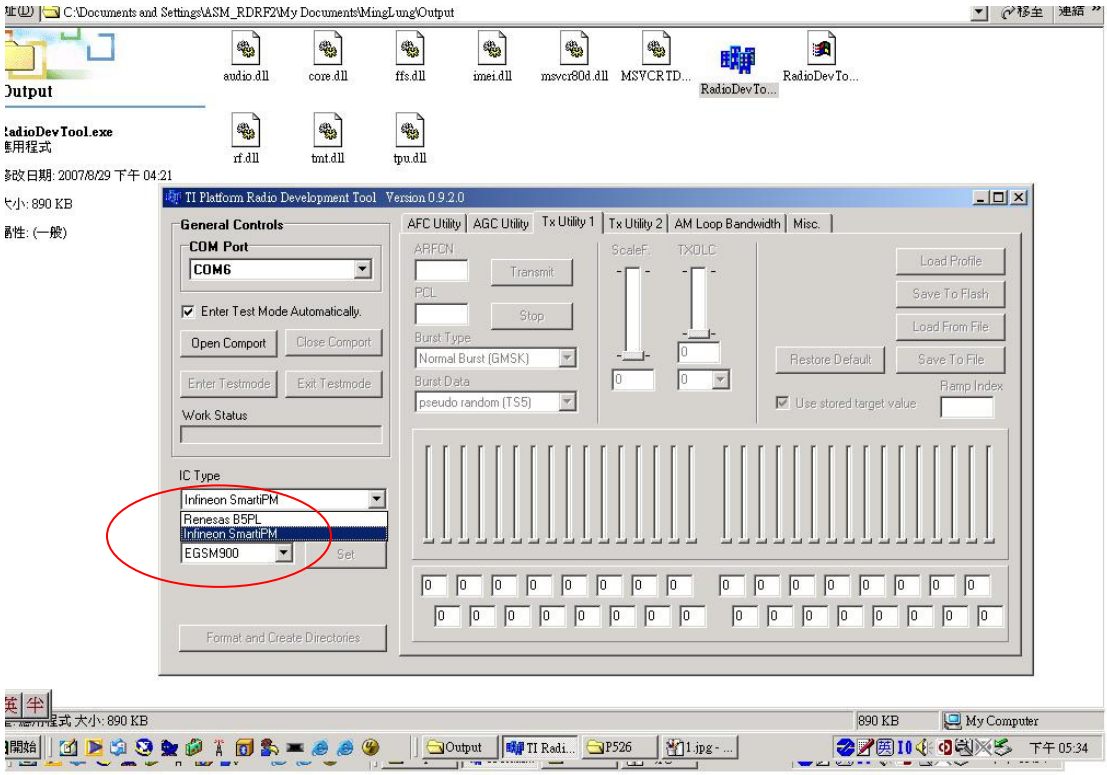
8.2 RF Debug Tool

1. Double click the tool

Build COM port and try to enter Test mode!



2. choose the IC -> Infineon SmartPM for P320 radio process type.



3. Transmit function and Receiver function group

AFC Utility

For GSM frequency test

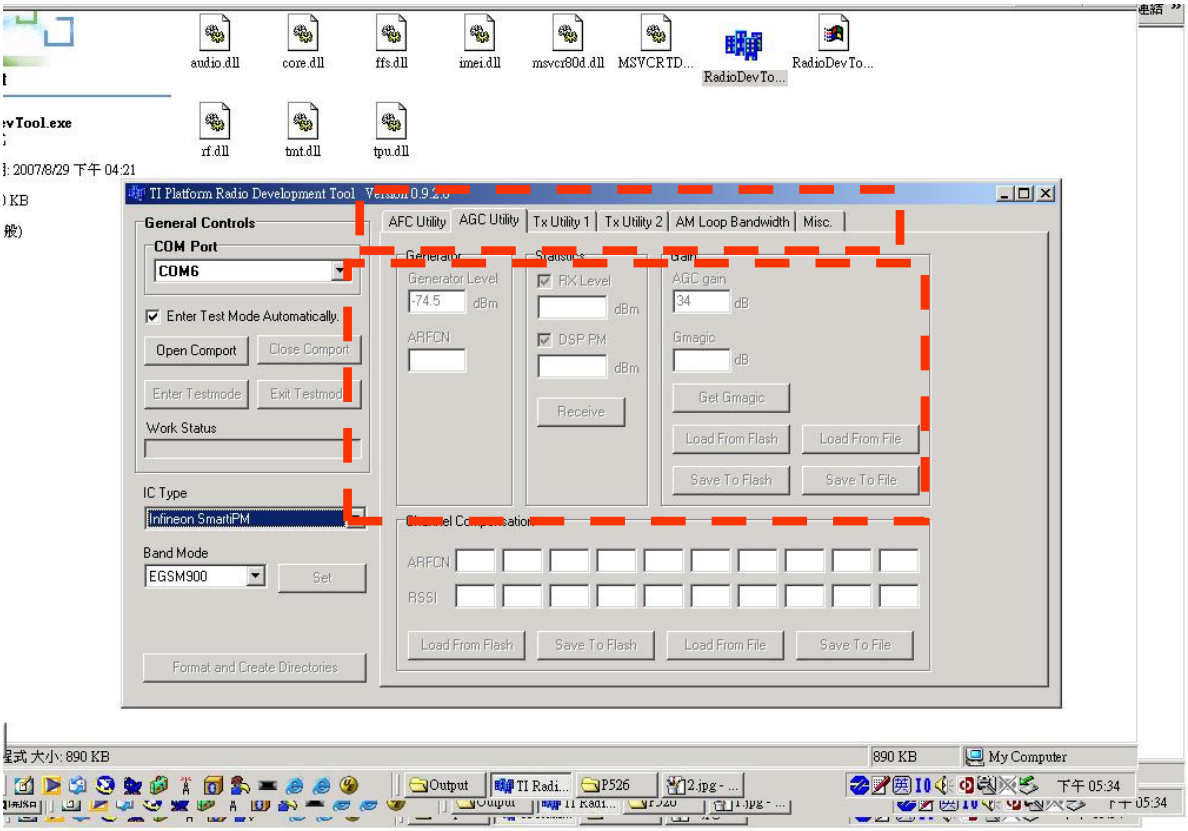
AGC Utility

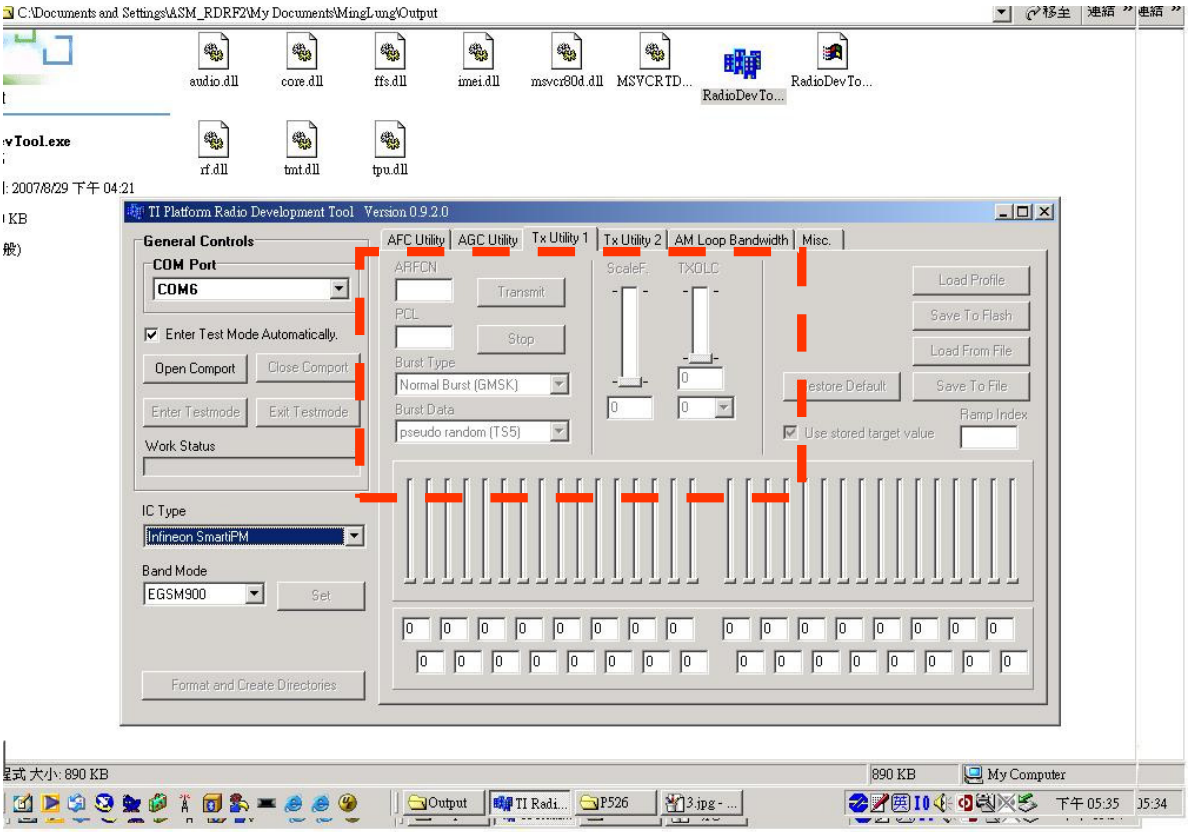
Auto Gain control for RX

TX Utility1→APC test item

TX Utility2→APC test item

AM loop Bandwidth → less to use


audio.dll
core.dll
ffs.dll
imei.dll
msvcr80d.dll
MSVCRTD...
RadioDevTo...
rf.dll
tmt.dll
tpu.dll
TI Platform Radio Development Tool Version 0.9.2.0
General Controls
COM Port
COM6
Enter Test Mode Automatically
Open Comport
Close Comport
Enter Testmode
Exit Testmod
Work Status
IC Type
Infineon SmartPM
Band Mode
EGSM900
Set
Format and Create Directories
AFC Utility
AGC Utility
Tx Utility 1
Tx Utility 2
AM Loop Bandwidth
Misc.
Generator
Generator Level
-74.5
dBm
ARFCN
Status
RX Level
DSP PM
Receive
Gain
AGC gain
34
Gmagic
Get Gmagic
Load From Flash
Load From File
Save To Flash
Save To File
RSSI
890 KB
My Computer
Output
TI Radi...
P526
2.jpg - ...
下午 05:34


C:\Documents and Settings\ASM_RDRF2\My Documents\MingLung\Output
audio.dll
core.dll
ffs.dll
imei.dll
msvcr80d.dll
MSVCRTD...
RadioDevTo...
rf.dll
tmt.dll
tpu.dll
TI Platform Radio Development Tool Version 0.9.2.0
General Controls
COM Port
COM6
Enter Test Mode Automatically
Open Comport
Close Comport
Enter Testmode
Exit Testmode
Work Status
IC Type
Infineon SmartPM
Band Mode
EGSM900
Set
Format and Create Directories
AFC Utility
AGC Utility
Tx Utility 1
Tx Utility 2
AM Loop Bandwidth
Misc.
ARFCN
Transmit
PCL
Stop
Burst Type
Normal Burst (GMSK)
Burst Data
pseudo random (TS5)
ScaleF.
TXOLC
Load Profile
Save To Flash
Load From File
Save To File
Ramp Index
Use stored target value
890 KB
My Computer
Output
TI Radi...
P526
3.jpg - ...
下午 05:35

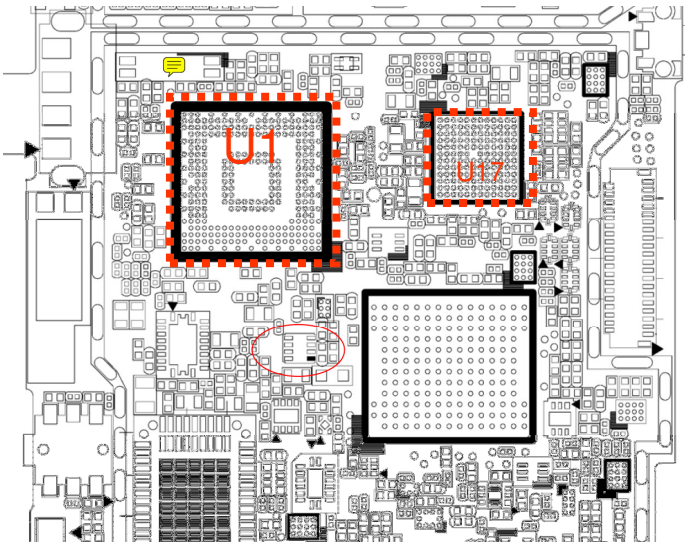
8.2 AFC Fail

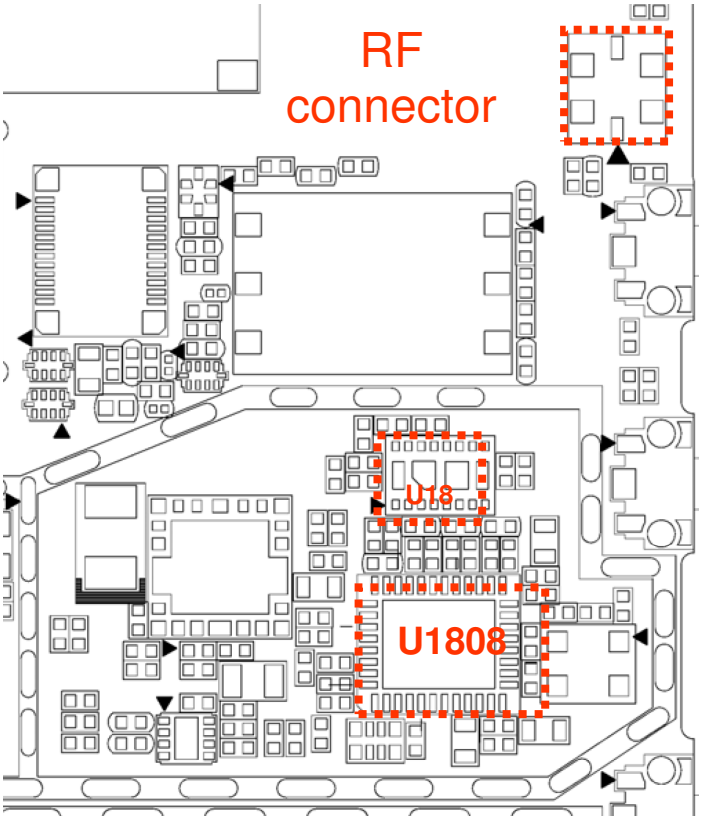
1. Check RF connector firstly.
2. Check calibration log file.

-AGC fail----check U1806 (Re-heat on U1808).

-APC pass----check OMAP850 (U1).

-APC fail-----check E-SYREN (U17).



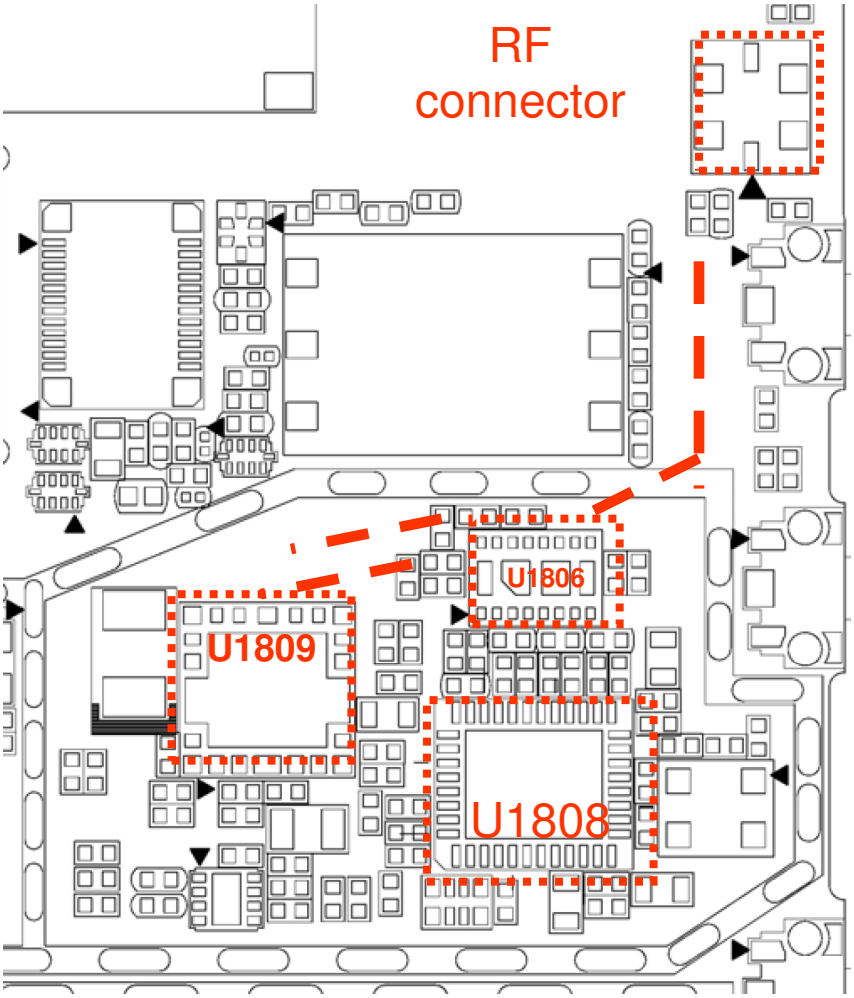


8.3 APC Fail (TX)

- Check RF connector firstly
- Checking which band fail
- Using debug tool

-Check U1806 (re-heat U1809)

-Check TX trace



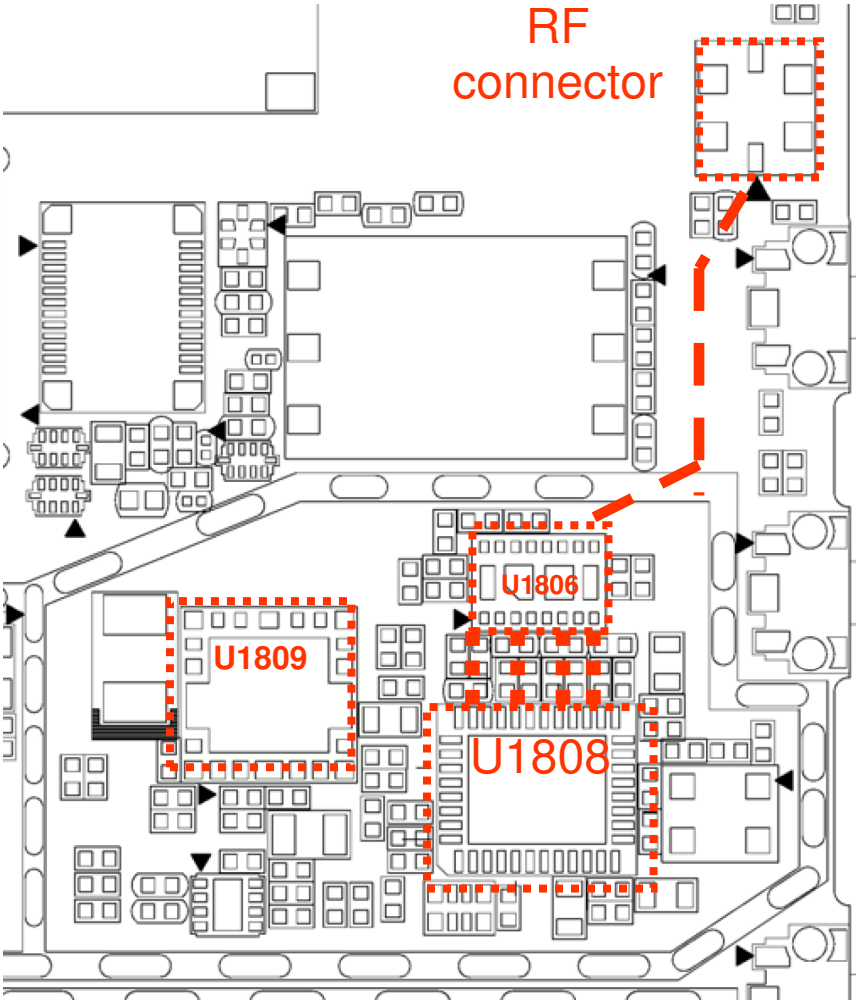
8.4 AGC Fail (RX)

- Check RF connector firstly
- Read the g-magic value (200-212)

-Too high: Check instrument setting

-Too low: Using debug tool

- Check the U1806 (re-head)
- Check the RX trace



9. GPS Trouble Shooting

- Using SiRF Demo tool

-Checking the CN value in active port

1. Compare to golden samples
2. Pass: check passive port
3. Fail: check GPS trace

-Checking the CN value in passive port

1. Compare to golden samples
2. Pass ----check antenna pad
3. Fail------check GPS trace